

-2-

crosspoints at low swing. In certain embodiments of the invention such as illustrated in Figure 20 of the present application, a clocked regenerative amplifier 119 in the crosspoint enables sensing of the very low swing signal on the input bus. A low swing driver 223 repeats the sensed signal on the output bus. This more complex crosspoint circuit enables low swing drive of both the input buses and the output buses for a substantial reduction in power requirements. It is counterintuitive that the more complex, active amplifier and driver circuits would result in such a power requirement reduction.

Claim 13 was rejected under 35 U.S.C. 102(e) as being anticipated by Sherman, U.S. patent 6,141,765. That rejection is respectfully traversed.

Sherman et al. relates to a bus 36 in which devices share address lines 64 and data lines 66. Sharing of the bus lines is controlled by controller 62, which does include a crossbar topology illustrated in Figs. 9A and 9B. As noted at column 4, lines 16-24, the bus is a combination of point-to-point connection for timing and strobing information and a conventional common address and data bus. The architecture provides certain benefits of a pure crossbar architecture with a reduced number of wires. The Examiner refers to column 10, lines 18-23 for a reference to low voltage swing signals and to column 14, lines 44-45 for reference to a crossbar. However, the two references are distinct. The low swing signals would presumably be on the common bus line 36, not in the controller 62 where the crossbar resides. There is no suggestion that crosspoints of the crossbar of Figs. 9A and 9B are driven by low swing signals or drive low swing signals. In fact, the undersigned can find no description of the crosspoints of the referenced crossbar topology.

In conclusion, Sherman does not teach "at crosspoints between input buses and output buses sensing [low swing] signals on the input buses and driving signals on the output buses at low swing."

-3-

Claims 1 and 2 were rejected under 35 U.S.C. 103 as being unpatentable over Mu et al., U.S. patent 6,490,213, in view of Sherman. That rejection is respectfully traversed and reconsideration is requested.

As already noted, Sherman makes no reference to a crosspoint switch architecture using low swing voltages. Mu et al. does relate to a crossbar and does rely on a low voltage swing differential signal on its output lines 402, 403. However, similar to the previously distinguished Shin and Hodges reference, Mu et al. receives a full voltage data input 410 at each crosspoint. See the data signal in Fig. 8. Nor does the crosspoint of Mu et al. comprise amplifiers as suggested by the Examiner with respect to claims 2 and 8. The sense amplifier 480 referenced by the Examiner at column 10, line 45 is an output amplifier that senses the signals on the output bus 402, 403. That amplifier might be compared to the receive amplifiers 207 and 208 in Fig. 17 of the present application. It is not within the crosspoint between the input line 410 and the output lines 402, 403 as would be required by claims 2 and 8.

With respect to claim 9, the Examiner has stated that Mu et al. teaches that the signals on the input and output buses are differential signals. As already noted, Mu et al. has a differential output but not a differential input to the crosspoint.

Other claims were rejected under various combinations of Mu et al. and Sherman with Krishnamurthy et al., U.S. patent 6,181,166, Lukes et al., U.S. patent 6,218,901, Karp, U.S. patent 5,469,154 and Fletcher, U.S. patent 6,392,466. Each of those references either does not relate to a crosspoint switch or does not suggest a crosspoint switch having low swing differential inputs and low swing differential outputs or a regenerative amplifier at the crosspoint. Other less significant features for which the references have been cited have also not been taught.

In view of the above remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

-4-

Respectfully submitted,
HAMILTON, BROOK, SMITH & REYNOLDS, P.C.

By 

James M. Smith
Registration No. 28,043
Telephone: (978) 341-0036
Facsimile: (978) 341-0136

Concord, MA 01742-9133

Dated: 5/26/04